BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Certificate in Information Technology Pearson BTEC International Level 3 Subsidiary Diploma in Information Technology Pearson BTEC International Level 3 Foundation Diploma in Information Technology Pearson BTEC International Level 3 Diploma in Information Technology Pearson BTEC International Level 3 Extended Diploma in Information Technology
Unit number and title	**Unit 22: Introduction to Robotics and Automation**
Learning aim(s)	Learning aim B: Design an automated solution for an identified need Learning aim C: Produce an automated solution for an identified need
Assignment title	Implementing an automated solution
Assessor	
Issue date	
Hand in deadline	

Vocational scenario or Context	You have recently started an internship at a small independent software development company. The company develops bespoke apps and computer systems for other small companies. The owner of the company is considering expanding and diversifying the company by entering the robotics and automation market. After reading your report (Assignment 1), the owner of the company wants to explore the possibility of robotics and automation further. They have asked you to create a prototype automated solution that could be further developed into a larger commercial product. The automated solution must have physical robotic components. The owner has made these suggestions: • monitoring and control system for a greenhouse • remote controlled vehicle • automated food/beverage production • assistive robot for a person with additional needs • interactive festive decoration

	• indoor environment mapping robot • automatic pet feeding station.
Task 1a	Choose an automated project that you wish to develop. You can select one of the examples listed in the vocational context or choose your own. First you must define the objectives of the project. You should include: • an overview of the problem that will be solved and description of the proposed solution • a list of success criteria/functional requirements against which you can evaluate the solution. Next you should produce a set of detailed designs plan for your proposed solution which will include: • algorithm design documentation, including flow charts and pseudocode • physical system plans • logical system plans.
Task 1b	Review your proposed design with at least two other people. Keep a record of the feedback you receive and use this feedback to refine your design so that it better meets the needs of the identified project.
Task 1c	Write a justification of the design decisions you have made, showing how they have helped ensure the planned solution will meet the requirements of the identified project.
Checklist of evidence required	Design documents for an automated solution Feedback on the documentation/designs collected from others Improved version of the documentation/design. Written justification of design decisions.

Criteria covered by this task:	
Criteria reference	To achieve the criteria you must show that you are able to:
B.M3	Refine designs in response to feedback, justifying any changes made
B.P3	Produce a set of designs for an automated solution that meets identified requirements.
B.P4	Review designs with others to identify and inform improvements.

Task 2a	Develop your automated solution. Your project should demonstrate: • use of appropriate programming languages, software, data and physical computing requirements • use of tools provided by integrated development environments and related code development tools to produce automated solutions • selection and use of different hardware components in combination to create complete automated solution. During development you must demonstrate application of an iterative development processes and techniques to test and refine your solution to ensure that it is fit for purpose, including: • developing a test plan to ensure the testing of the complete system • documenting the application of the test plan • documenting the outcomes of testing • fixing/address any errors or faults identified • recording any corrective actions taken • retesting to confirm success of corrective actions. Ensure that you test and review the hardware, software and data components of your solution.
Task 2b	Write an evaluation of your automated solution, considering its efficiency, effectiveness and the extent to which it meets the requirements in the project. Your evaluation needs to be supported by evidence from the development and testing stages. Your evaluation should reach conclusions and suggest ways that the automated solution could be developed in the future.
Checklist of evidence required	• Completed automated solution • Copy of the solution's source code • Test documentation • Evaluation of the development, testing and refinement process

Criteria covered by this task:	
Criteria reference	To achieve the criteria you must show that you are able to:
BC.D2	Use iterative development processes to produce a highly-robust and efficient automated solution that makes effective use of hardware, software and data components.
BC.D3	Evaluate the effectiveness of an automated solution.
C.M3	Use iterative development processes to produce an automated solution that makes effective use of hardware, software and data components.
C.P5	Develop an automated solution using appropriate, hardware, software and data components.
C.P6	Test hardware, software and data components to identify and resolve defects.

Sources of information to support you with this Assignment	https://itp.nyu.edu/physcomp/ https://maker.pro/raspberry-pi https://maker.pro/arduino/projects
Other assessment materials attached to this Assignment Brief	